# CITY OF TETON (PWS 7220072)
# SOURCE WATER ASSESSMENT FINAL REPORT

**July 1, 2002**

## State of Idaho
## Department of Environmental Quality

## Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land use inventory of the designated source water assessment area and sensitivity factors associated with the well and aquifer characteristics.

This report, *City of Teton, Idaho*, describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

Final susceptibility scores are derived from equally weighted system construction scores, hydrologic sensitivity scores, and potential contaminant/land use scores. Therefore, a low rating in one or two categories coupled with a higher rating in other category results in a final rating of low, moderate, or high susceptibility. With the potential contaminants associated with most urban and heavily agricultural areas, the best score a well can get is moderate. Potential contaminants are divided into four categories, inorganic contaminants (IOCs, i.e. nitrates, arsenic), volatile organic compounds (VOCs, i.e. petroleum products), synthetic organic contaminants (SOCs, i.e. pesticides), and microbial contaminants (i.e. bacteria). As different wells can be subject to various contamination settings, separate scores are given for each type of contaminant.

The City of Teton drinking water system consists of two ground water well sources. Both wells have high susceptibility to all categories of potential contaminants: IOC, VOC, SOC, and microbial contamination. The major transportation corridor (Highway 33) as well as the predominant agricultural land use contributed the most points to the high ratings. Well logs for the wells were unavailable, increasing the scores for hydrologic sensitivity and system construction and contributing to the overall high susceptibility ratings.

Total coliform was detected in the distribution system in September 1995. The IOC fluoride has been detected at the manifold and at Well #1 in levels up to 2.48 milligrams per liter (mg/L). The maximum contaminant level (MCL) for fluoride is 4.0 mg/L. Arsenic (IOC) was detected in Well #1 at 10 parts per billion (ppb) in December 1998. The EPA has recently lowered the arsenic standard from 50 ppb to 10 ppb. However, the agency has given public water systems until 2006 to be in compliance with the new standard. According to a press release posted on the EPA website (www.epa.gov), the EPA intends to provide up to $20 million over the next two years for research and development of more cost-effective technologies to help small systems meet the new standard and provide technical assistance to small system operators. The EPA has also stated that it “will work with small communities to maximize grants and loans under current State Revolving Fund and Rural Utilities Service programs of the Department of Agriculture” (USEPA, 2001, para 5).

Nitrate concentrations have been recorded in the manifold at levels below 1.9 mg/L. The MCL for nitrate is 10 mg/L. No VOCs or SOCs has been recorded in either of the wells during any water chemistry tests. Bacteria were detected in the distribution system (9-95), but no repeat detections have ever been found at the wellheads. Surrounding agricultural land use practices have contributed to the ratings of "High" for county level nitrogen fertilizer use, county level herbicide use, and total county level Ag-chemical use. Though there have not been chemical problems with the system water, the City of Teton should be aware that the potential for contamination of the aquifer exists.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific use.

For the City of Teton's drinking water wells, drinking water protection activities should focus on correcting any deficiencies outlined in the sanitary surveys (inspections conducted every five years with the purpose of determining the physical condition of a water system's components and its capacity), including protection of the wells from surface flooding. Also, disinfection practices should be implemented if microbial contamination becomes a problem. Though the City of Teton has until 2006 to be in compliance with the new arsenic standard, it may need to implement measures to protect the drinking water of its wells. Since arsenic contamination may exceed the new drinking water standards, the City of Teton should investigate various engineering solutions like ion exchange, reverse osmosis, or activated alumina that could be used to treat this problem. No chemicals should be stored or applied within the 50-foot radius of the wellheads. Additionally, there should be a focus on the implementation of practices aimed at reducing the leaching of farm chemicals from agricultural land within the designated source water areas and awareness of the potential contaminant sources within the delineation zone. Since much of the designated protection areas are outside the direct jurisdiction of the City of Teton, collaboration and partnerships with state and local agencies, and industry groups should be established and are critical to the success of drinking water protection.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan as the delineation is near urban and residential land uses. Public education topics could include proper lawn and garden care practices, household hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. As there is a transportation corridor through the delineation, the Idaho department of transportation should be involved in protection activities. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation District, and the Natural Resources Conservation Service.

A community must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Idaho Falls Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

# SOURCE WATER ASSESSMENT FOR THE CITY OF TETON, IDAHO

## Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** Maps showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are attached. The list of significant potential contaminant source categories and their rankings used to develop the assessment is also included.

### Background

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

### Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, there is limited time and resources to accomplish the assessments. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a drinking water protection program should be determined by the local community based on its own needs and limitations. Wellhead or drinking water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

## Section 2. Conducting the Assessment

### General Description of the Source Water Quality

The public drinking water system for the City of Teton is comprised of two ground water wells that serve approximately 570 people through 200 connections for community use. Situated in Fremont County, the wells are located within the City of Teton on Center Street near Highway 33 (Figure 1).

There are no current significant potential water problems affecting the water system of the City of Teton. Total coliform was detected in the distribution system in September 1995. The inorganic contaminant (IOC) fluoride was detected in levels below the maximum contaminant level (MCL) at the manifold in December 1995 and at Well #1 in December 1998. Arsenic (IOC) was detected in Well #1 at 10 parts per billion (ppb) in December 1998. EPA has recently lowered the arsenic standard from 50 ppb to 10 ppb. However, EPA has given public water systems until 2006 to be in compliance with the new standard. Nitrate concentrations have been recorded in the manifold at levels below 1.9 mg/L. The MCL for nitrate is 10 mg/L. No volatile organic (VOC) or synthetic organic contamination (SOC) has been recorded in either of the wells during any water chemistry tests. Surrounding agricultural land use practices have contributed to the ratings of “High” for county level nitrogen fertilizer use, county level herbicide use, and total county level Ag-chemical use.

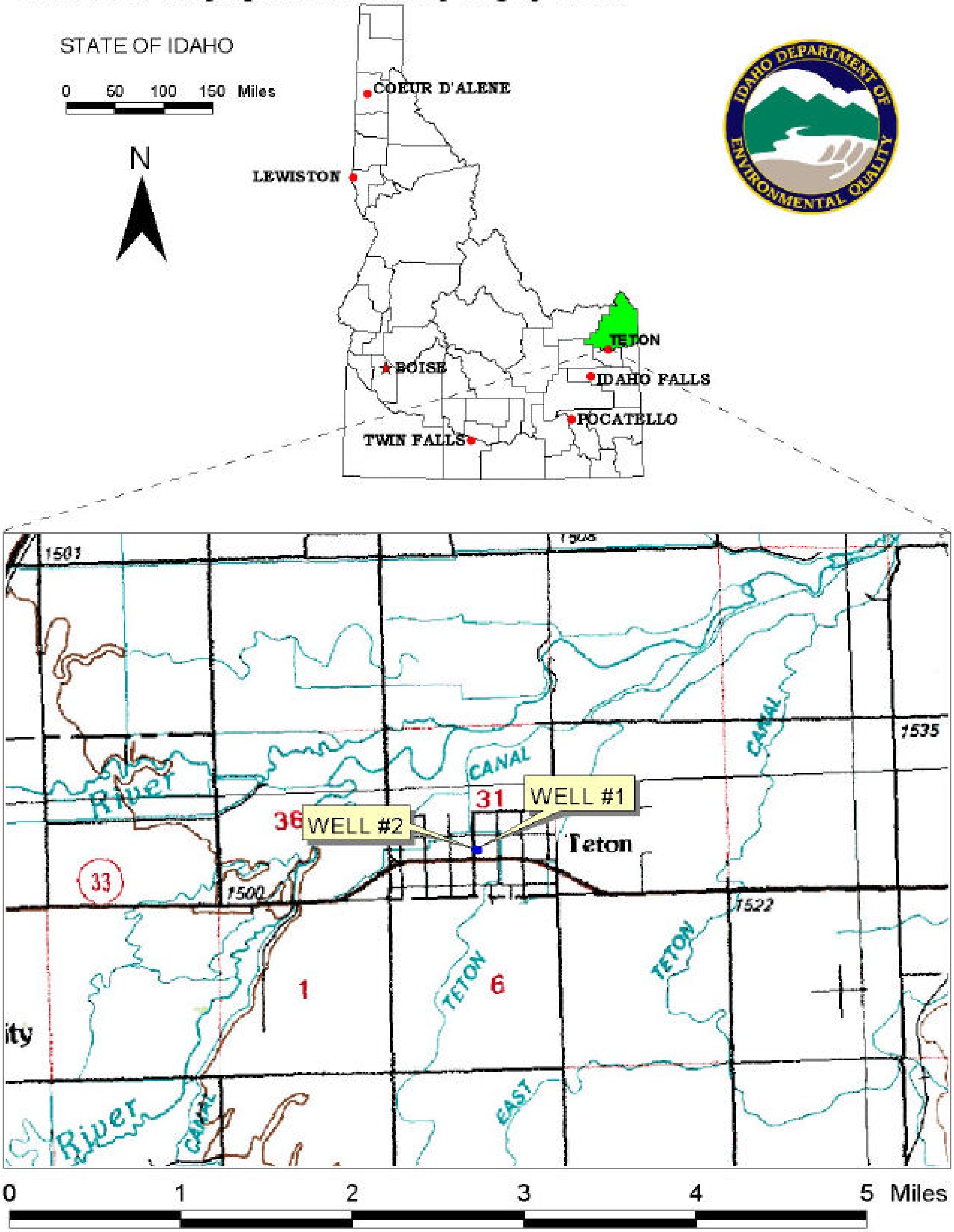
### Defining the Zones of Contribution – Delineation

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel (TOT) zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ contracted with Washington Group, International (WGI) to perform the delineations using a refined computer model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) TOT for water associated with the Eastern Snake River Plain (ESRP) aquifer in the vicinity of the wells of the City of Teton. The computer model used site specific data, assimilated by WGI from a variety of sources including the City of Teton operator input, local area well logs, and hydrogeologic reports (detailed below).

The ESRP is a northeast trending basin located in southeastern Idaho. Ten thousand square miles of the basin are primarily filled with highly fractured layered Quaternary basalt flows of the Snake River Group, which are intercalated with terrestrial and lacustrine (lake-deposited) sediments along the margins (Garabedian, 1992, p. 5). Individual basalt flows range from 10 to 50 feet in thickness and average 20 to 25 feet (Lindholm, 1996, p. 14). Basalt is thickest in the central part of the eastern plain and thins toward the margins. Whitehead (1992, p. 9) estimates the total thickness of the flows to be as great as 5,000 feet. A thin layer (0 to 100 feet) of windblown and fluvial sediments overlies the basalt.

The plain is bound on the northeast by rocks of the Yellowstone Group (mainly rhyolite) and Idavada Volcanics to the southwest. The Snake River flows along part of the southern boundary and is the only drainage that leaves the plain. Rivers and streams entering the plain from the south are tributary to the Snake River. Other than the Big and Little Wood rivers, rivers entering from the north vanish into the highly transmissive basalts of the Snake River Plain aquifer.

*FIGURE 1. Geographic Location of City of Teton*



The layered basalts of the Snake River Group host one of the most productive aquifers in the United States. The aquifer is generally considered unconfined, yet it may be locally confined in some areas because of inter-bedded clay and dense unfractured basalt (Whitehead, 1992, p. 26). Whitehead (1992, p. 22) reports that well yields of 2,000 to 3,000 gal/min are common for wells open to less than 100 feet of the aquifer. Lindholm (1996, p. 18) estimates aquifer thickness to range from several hundred feet near the plain's margin to thousands of feet near the center.

The majority of aquifer recharge results from surface water irrigation activities (incidental recharge), which divert water from the Snake River and its tributaries (Ackerman, 1995, p. 4, and Garabedian, 1992, p. 11). Natural recharge occurs through stream losses, direct precipitation, and tributary basin underflow.

The Upper ESRP hydrologic province is located on the northeastern margin of the ESRP. The majority of the province is located above the confluence of the South and Henrys Forks of the Snake River in southwestern Madison County. The province occupies portions of Fremont, Madison, Jefferson, and Bonneville counties. The province covers 445 square miles, which is 4.3 percent of the ESRP's total area.

Published water table maps specific to the Upper ESRP regional aquifer are limited. The few area-specific maps that are available (e.g., Crosthwaite et al., 1967, p. 27, and Baker, 1991, p. 10) show similar patterns of flow to those depicted at the regional scale. Regional ground water flow is to the southwest paralleling the basin (Cosgrove et al., 1999, p. 21; deSonneville, 1972, p. 78; Garabedian, 1992, p. 48; and Lindholm, 1996, p. 23). Ground water flow direction at the local scale is thought to be highly variable due to preferential flow paths through the fractured and layered basalts.

The delineated source water assessment areas for the wells of the City of Teton can best be described as pie-shaped corridors approximately four and a half miles long extending along Highway 33 from the wellheads in the City of Teton to the east ending beyond the City of Newdale (Figure 2 and Figure 3). The actual data used by WGI in determining the source water assessment delineation areas are available from DEQ upon request.

**Identifying Potential Sources of Contamination**

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and others, such as cryptosporidium, and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of groundwater contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

Land use within the immediate area of wells of the City of Teton consists of residential and transportation uses, while the surrounding area is predominantly irrigated agriculture.

It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, including educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

### Contaminant Source Inventory Process

A two-phased contaminant inventory of the study area was conducted in July through August 2001. The first phase involved identifying and documenting potential contaminant sources within the City of Teton Source Water Assessment Area (Figure 2) through the use of computer databases and Geographic Information System maps developed by DEQ. The second, or enhanced, phase of the contaminant inventory involved contacting the operator to identify and add any additional potential sources in the area.

The delineated source water areas encompass pie-shaped corridors of land extending from the well sites and following along Highway 33 to the east. The delineations (Table 1, Figure 2 and Figure 3) of both wells have five potential contaminant sources each, including two geothermal mines in the 10-year time of travel (TOT) and Highway 33 that runs through the 3-year, 6-year, and 10-year TOTs within the delineations.

**Table 1. Wells of the City of Teton, Potential Contaminant Inventory**

| Site # | Source Description[1] | TOT ZONE[2] | Source of Information | Potential Contaminants[3] |
|---|---|---|---|---|
| 1 | Mine | 6 - 10 | Database Search | IOC, VOC, SOC, |
| 2 | Mine | 6 - 10 | Database Search | IOC, VOC, SOC, |
| | Highway 33 | 0 - 3 | GIS Map | IOC, VOC, SOC, Microbes |
| | Highway 33 | 3 – 10 | GIS Map | IOC, VOC, SOC |

**[2] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead**
**[3] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical**

***Figure 2. City of Teton Delineation Map and Potential Contaminant Source Locations***

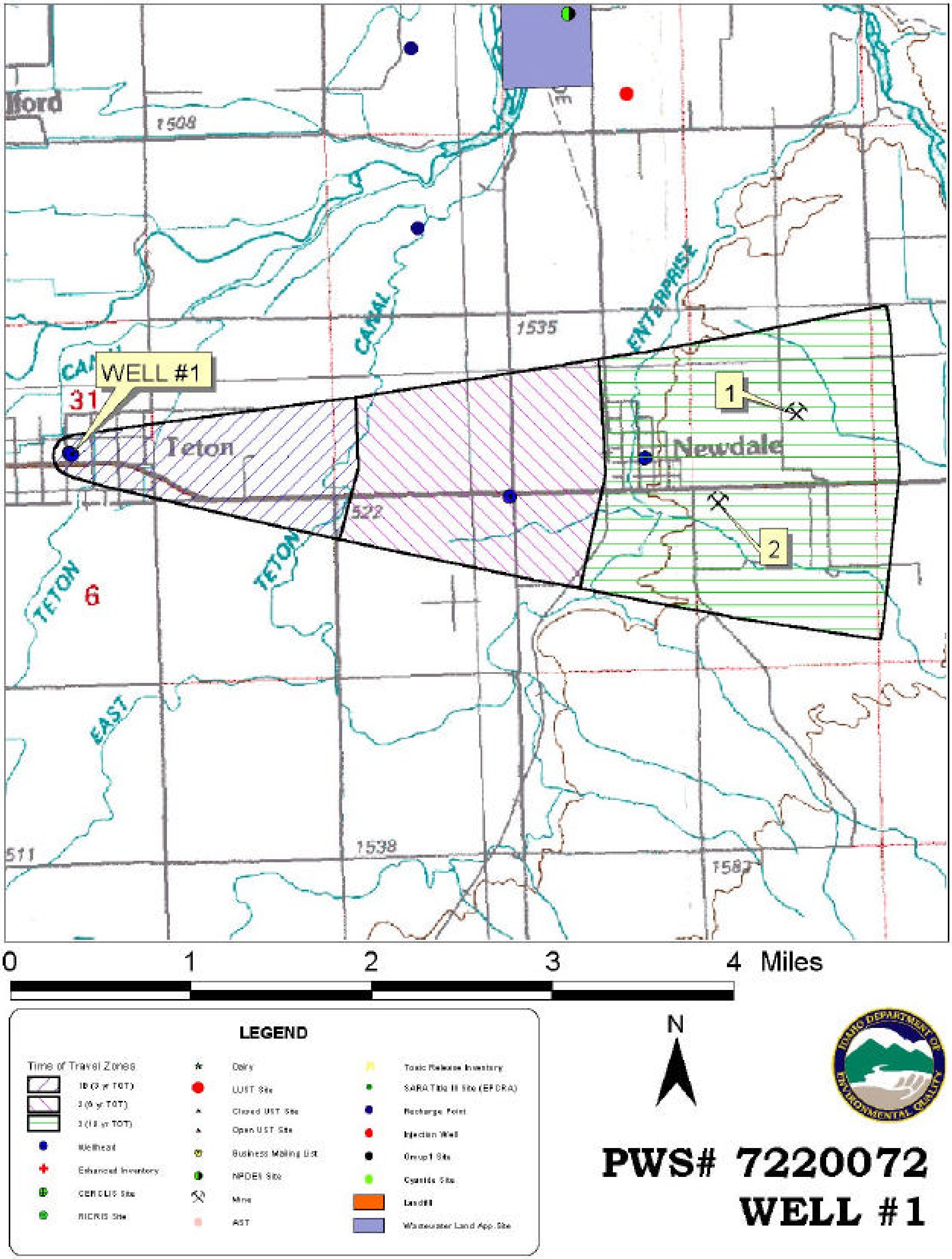
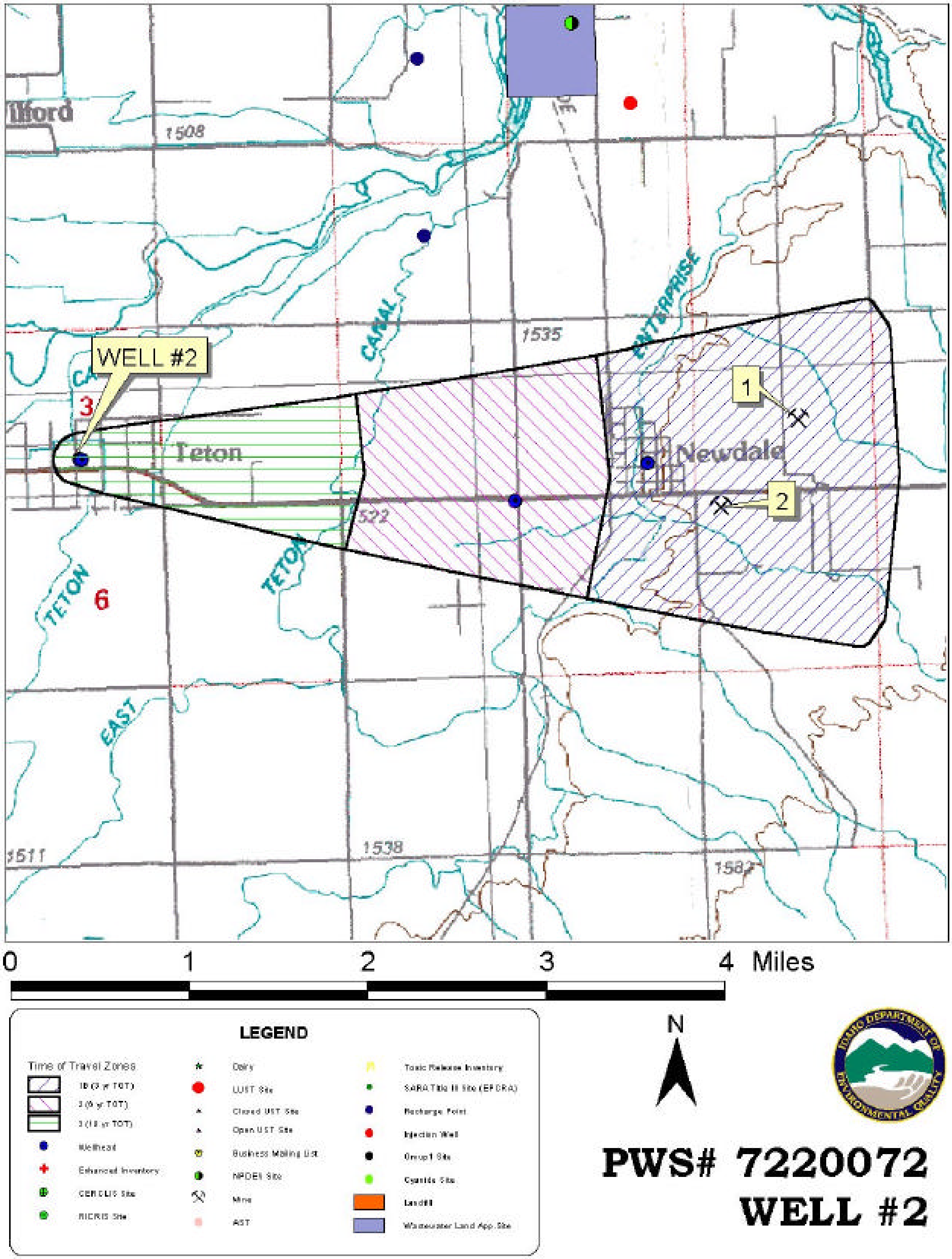


*Figure 3. City of Teton Delineation Map and Potential Contaminant Source Locations*



## Section 3. Susceptibility Analyses

Each well's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. Each of these three categories carries the same weight in the final assessment, meaning that a low score in one category coupled with higher scores in the other categories can still lead to a overall susceptibility of high. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. Attachment A contains the susceptibility analysis worksheet for the system. The following summaries describe the rationale for the susceptibility ranking.

### Hydrologic Sensitivity

The hydrologic sensitivity of a well is dependent upon four factors: the surface soil composition, the material in the vadose zone (between the land surface and the water table), the depth to first ground water, and the presence of a 50-foot thick fine-grained zone above the producing zone of the well. Slowly draining soils such as silt and clay typically are more protective of ground water than coarse-grained soils such as sand and gravel. Similarly, fine-grained sediments in the subsurface and a water depth of more than 300 feet protect the ground water from contamination.

Hydrologic sensitivity rates high for both wells (Table 2). The soils surrounding the area of the wellheads are in the moderate to well-drained soil class. The well logs were unavailable, preventing a determination of the depth to ground water, composition of the vadose zone, or the presence of low permeability layers.

### Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. Lower scores imply a system is less vulnerable to contamination. For example, if the well casing and annular seal both extend into a low permeability unit, then the possibility of contamination is reduced and the system construction score goes down. If the highest production interval is more than 100 feet below the water table, then the system is considered to have better buffering capacity. If the wellhead and surface seal are maintained to standards, as outlined in sanitary surveys, then contamination down the well bore is less likely. If the well is protected from surface flooding and is outside the 100-year floodplain, then contamination from surface events is reduced.

For the City of Teton, Well #1 has a high system construction score and Well #2 has a moderate system construction score. The well logs for both wells were unavailable making it impossible to determine the depth to first ground water, the depth of the highest production interval, and the placement of the casing and annular seal. The 1992 Sanitary Survey indicated that the surface and wellhead seals were maintained to standards for both wells. However, it showed that only Well #2 was protected from surface flooding.

Though the well logs were unavailable, the Sanitary Survey did provide some useful information about the wells' constructions. Both wells were drilled to a depth of 260 feet with a static water level of 90 feet. Well #1 was constructed with a 20-inch diameter casing. Well #2 was constructed with a 12-inch diameter casing.

Though the wells may have been in compliance with standards when they were completed, current public water system (PWS) well construction standards are more stringent. The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all PWSs to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. These standards include provisions for well screens, pumping tests, and casing thicknesses to name a few. Table 1 of the *Recommended Standards for Water Works* (1997) lists the required steel casing thickness for various diameter wells. A twenty-inch diameter well requires a casing thickness of at least 0.375-inches and a twelve-inch diameter well requires a casing thickness of at least 0.375-inches.

**Potential Contaminant Source and Land Use**

Both wells of the City of Teton rate high for IOCs (i.e. nitrates arsenic) moderate for VOCs (i.e. petroleum products) and SOCs (i.e. pesticides) and low for microbial contaminants (i.e. bacteria). The local transportation corridor (Highway 33) that extends through all three TOT zones of the delineation as well as the predominant agricultural land use in the delineated source area account for the largest contribution of points to the potential contaminant inventory rating.

The wells are in a county with high nitrate fertilizer use, high levels of herbicide use, and high total ag-chemical use. Total coliform bacteria were repeatedly detected in the distribution system of wells in September 1995. However, there have been no total coliform repeat detections in the wells. The wells have consistently shown nitrate (an IOC) at levels below 1.9 mg/L (the MCL is 10 mg/L). Fluoride (IOC) has been detected in Well #1 and in the manifold at levels below the MCL of 4 mg/L (2.43 mg/L at Well #1 in December 1998; 2.48 mg/L at manifold in December 1995). Arsenic has been detected in Well #1 at 10 ppb. The EPA has recently lowered the arsenic standard from 50 ppb to 10 ppb. However, the agency has given public water systems until 2006 to be in compliance with the new standard. No VOCs or SOCs have been detected in the wells.

**Final Susceptibility Ranking**

A detection above a drinking water standard MCL or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well despite the land use of the area because a pathway for contamination already exists. Additionally, if there are contaminant sources located within 50 feet of the source then the wellhead will automatically get a high susceptibility rating. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0- to 3-year time of travel zone (Zone 1B) and agricultural land contribute greatly to the overall ranking. In terms of total susceptibility, both of the City of Teton wells rate high for all categories of potential contaminants.

**Table 2. Summary of City of Teton Susceptibility Evaluation**

| Well | Susceptibility Scores[1] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Hydrologic Sensitivity | Contaminant Inventory | | | | System Construction | **Final Susceptibility Ranking** | | | |
| | | IOC | VOC | SOC | Microbials | | IOC | VOC | SOC | Microbials |
| Well #1 | H | H | M | M | L | H | H | H | H | H |
| Well #2 | H | H | M | M | L | H | H | H | H | H |

**[1]H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility,**
**IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical**

**Susceptibility Summary**

Overall, both of the wells of the City of Teton rank high for IOCs, VOCs, SOCs, and microbial contaminants. The hydrologic sensitivity and system construction scores contributed greatly to the high susceptibility ratings for the wells. Highway 33, a major transportation corridor that runs through all three TOT zones of both delineations, with the potential to add leachable chemicals to the aquifer, also contributed many points. The intense agricultural practices and the high county-wide use of agricultural chemicals also added points to the high susceptibility ratings.

There are no current significant potential water problems affecting the wells of the City of Teton. Total coliform was detected in the distribution system in September 1995. The IOC fluoride was detected in levels below the MCL at the manifold in December 1995 and at Well #1 in December 1998. Arsenic (IOC) was detected in Well #1 at 10 ppb in December 1998. The Environmental Protection Agency (EPA) has recently lowered the arsenic standard from 50 ppb to 10 ppb. However, the agency has given public water systems until 2003 to be in compliance with the new standard. Nitrate concentrations have been recorded in the manifold at levels below 1.9 mg/L. The MCL for nitrate is 10 mg/L. No volatile organic VOCs or SOCs has been recorded in either of the wells during any water chemistry tests. Surrounding agricultural land use practices have contributed to the ratings of “High” for county level nitrogen fertilizer use, county level herbicide use, and total county level Ag-chemical use.

## Section 4. Options for Drinking Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective drinking water protection program is tailored to the particular local source water protection area. A community with a fully developed drinking water protection program will incorporate many strategies. For the City of Teton’s drinking water wells, drinking water protection activities should focus on correcting any deficiencies outlined in the sanitary surveys, including protection of the wells from surface flooding. Also, disinfection practices should be implemented if microbial contamination becomes a problem. Though the City of Teton has until 2006 to be in compliance with the new arsenic standard, it may need to implement measures to protect the drinking water of its wells. Since arsenic contamination may exceed the new drinking water standards, the City of Teton should investigate various engineering solutions like ion exchange, reverse osmosis, or activated alumina that could be used to treat this problem.  No chemicals should be stored or applied within the 50-foot radius of the wellheads. Additionally, there should be a focus on the implementation of practices aimed at reducing the leaching of farm chemicals from agricultural land within the designated source water areas and awareness of the potential contaminant sources within the delineation zone.  Since much of the designated protection areas are outside the direct jurisdiction of the City of Teton, collaboration and partnerships with state and local agencies, and industry groups should be established and are critical to the success of drinking water protection.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term.  A strong public education program should be a primary focus of any source water protection plan as the delineation is near to urban and residential land uses.  There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA.  As there are transportation corridors through the delineation, the Idaho department of transportation should be involved in protection activities.  Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation District, and the Natural Resources Conservation Service.

A community must incorporate a variety of strategies in order to develop a comprehensive source water assessment protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices).  For assistance in developing protection strategies please contact the Idaho Falls Regional Office of the DEQ or the Idaho Rural Water Association.

**Assistance**

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan.  In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Idaho Falls Regional DEQ Office    (208) 528-2650

State DEQ Office    (208) 373-0502

Website:  http://www2.state.id.us/deq

Water suppliers serving fewer than 10,000 persons may contact Ms. Melinda Harper, Idaho Rural Water Association, at 208-343-7001 (mharper@velocitus.net) for assistance with drinking water protection (formerly wellhead protection) strategies.

# POTENTIAL CONTAMINANT INVENTORY
# LIST OF ACRONYMS AND DEFINITIONS

**AST (Aboveground Storage Tanks) –** Sites with aboveground storage tanks.

**Business Mailing List –** This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

**CERCLIS –** This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ASuperfund@ is designed to clean up hazardous waste sites that are on the national priority list (NPL).

**Cyanide Site –** DEQ permitted and known historical sites/facilities using cyanide.

**Dairy –** Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

**Deep Injection Well –** Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

**Enhanced Inventory** – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

**Floodplain –** This is a coverage of the 100year floodplains.

**Group 1 Sites –** These are sites that show elevated levels of contaminants and are not within the priority one areas.

**Inorganic Priority Area –** Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

**Landfill –** Areas of open and closed municipal and non-municipal landfills.

**LUST (Leaking Underground Storage Tank) –** Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

**Mines and Quarries** – Mines and quarries permitted through the Idaho Department of Lands.)

**Nitrate Priority Area –** Area where greater than 25% of wells/springs show nitrate values above 5 mg/L.

**NPDES (National Pollutant Discharge Elimination System) –** Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

**Organic Priority Areas –** These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

**Recharge Point –** This includes active, proposed, and possible recharge sites on the Snake River Plain.

**RICRIS –** Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

**SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) –** These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

**Toxic Release Inventory (TRI) –** The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

**UST (Underground Storage Tank) –** Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

**Wastewater Land Applications Sites** – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

**Wellheads –** These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

**NOTE:** Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

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# Attachment A

# City of Teton
# Susceptibility Analysis
# Worksheets

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)

2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.375)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

Ground Water Susceptibility Report      Public Water System Name :
TETON CITY OF      Well# : WELL #1
Public Water System Number 7220072      11/7/2001 10:28:58 AM

| 1. System Construction | | SCORE |
|---|---|---|
| Drill Date | | |
| Driller Log Available | NO | |
| Sanitary Survey (if yes, indicate date of last survey) | YES | 1992 |
| Well meets IDWR construction standards | NO | 1 |
| Wellhead and surface seal maintained | YES | 0 |
| Casing and annular seal extend to low permeability unit | NO | 2 |
| Highest production 100 feet below static water level | NO | 1 |
| Well located outside the 100 year flood plain | NO | 1 |
| Total System Construction Score | | 5 |

| 2. Hydrologic Sensitivity | | |
|---|---|---|
| Soils are poorly to moderately drained | NO | 2 |
| Vadose zone composed of gravel, fractured rock or unknown | YES | 1 |
| Depth to first water > 300 feet | NO | 1 |
| Aquitard present with > 50 feet cumulative thickness | NO | 2 |
| Total Hydrologic Score | | 6 |

| 3. Potential Contaminant / Land Use - ZONE 1A | | IOC Score | VOC Score | SOC Score | Microbial Score |
|---|---|---|---|---|---|
| Land Use Zone 1A | IRRIGATED CROPLAND | 2 | 2 | 2 | 2 |
| Farm chemical use high | YES | 2 | 0 | 2 | |
| IOC, VOC, SOC, or Microbial sources in Zone 1A | NO | NO | NO | NO | NO |
| Total Potential Contaminant Source/Land Use Score - Zone 1A | | 4 | 2 | 4 | 2 |
| **Potential Contaminant / Land Use - ZONE 1B** | | | | | |
| Contaminant sources present (Number of Sources) | YES | 1 | 1 | 1 | 1 |
| (Score = # Sources X 2 ) 8 Points Maximum | | 2 | 2 | 2 | 2 |
| Sources of Class II or III leacheable contaminants or | YES | 5 | 1 | 1 | |
| 4 Points Maximum | | 4 | 1 | 1 | |
| Zone 1B contains or intercepts a Group 1 Area | NO | 0 | 0 | 0 | 0 |
| Land use Zone 1B | Greater Than 50% Irrigated Agricultural Land | 4 | 4 | 4 | 4 |
| Total Potential Contaminant Source / Land Use Score - Zone 1B | | 10 | 7 | 7 | 6 |
| **Potential Contaminant / Land Use - ZONE II** | | | | | |
| Contaminant Sources Present | YES | 2 | 2 | 2 | |
| Sources of Class II or III leacheable contaminants or | YES | 1 | 1 | 1 | |
| Land Use Zone II | Greater Than 50% Irrigated Agricultural Land | 2 | 2 | 2 | |
| Potential Contaminant Source / Land Use Score - Zone II | | 5 | 5 | 5 | 0 |
| **Potential Contaminant / Land Use - ZONE III** | | | | | |
| Contaminant Source Present | YES | 1 | 1 | 1 | |
| Sources of Class II or III leacheable contaminants or | YES | 1 | 1 | 1 | |
| Is there irrigated agricultural lands that occupy > 50% of | YES | 1 | 1 | 1 | |
| Total Potential Contaminant Source / Land Use Score - Zone III | | 3 | 3 | 3 | 0 |
| Cumulative Potential Contaminant / Land Use Score | | 22 | 17 | 19 | 8 |

| | | IOC | VOC | SOC | Microbial |
|---|---|---|---|---|---|
| 4. Final Susceptibility Source Score | | 15 | 14 | 15 | 14 |
| 5. Final Well Ranking | | High | High | High | High |

Ground Water Susceptibility Report    Public Water System Name : TETON CITY OF    Well# : WELL #2

Public Water System Number 7220072    11/7/2001 10:25:13 AM

| 1. System Construction | | SCORE |
|---|---|---|
| Drill Date | | |
| Driller Log Available | NO | |
| Sanitary Survey (if yes, indicate date of last survey) | YES | 1992 |
| Well meets IDWR construction standards | NO | 1 |
| Wellhead and surface seal maintained | YES | 0 |
| Casing and annular seal extend to low permeability unit | NO | 2 |
| Highest production 100 feet below static water level | NO | 1 |
| Well located outside the 100 year flood plain | YES | 0 |
| Total System Construction Score | | 4 |

| 2. Hydrologic Sensitivity | | |
|---|---|---|
| Soils are poorly to moderately drained | NO | 2 |
| Vadose zone composed of gravel, fractured rock or unknown | YES | 1 |
| Depth to first water > 300 feet | NO | 1 |
| Aquitard present with > 50 feet cumulative thickness | NO | 2 |
| Total Hydrologic Score | | 6 |

| 3. Potential Contaminant / Land Use - ZONE 1A | | IOC Score | VOC Score | SOC Score | Microbial Score |
|---|---|---|---|---|---|
| Land Use Zone 1A | IRRIGATED CROPLAND | 2 | 2 | 2 | 2 |
| Farm chemical use high | YES | 2 | 0 | 2 | |
| IOC, VOC, SOC, or Microbial sources in Zone 1A | NO | NO | NO | NO | NO |
| Total Potential Contaminant Source/Land Use Score - Zone 1A | | 4 | 2 | 4 | 2 |
| **Potential Contaminant / Land Use - ZONE 1B** | | | | | |
| Contaminant sources present (Number of Sources) | YES | 1 | 1 | 1 | 1 |
| (Score = # Sources X 2 ) 8 Points Maximum | | 2 | 2 | 2 | 2 |
| Sources of Class II or III leacheable contaminants or | YES | 5 | 1 | 1 | |
| 4 Points Maximum | | 4 | 1 | 1 | |
| Zone 1B contains or intercepts a Group 1 Area | NO | 0 | 0 | 0 | 0 |
| Land use Zone 1B | Greater Than 50% Irrigated Agricultural Land | 4 | 4 | 4 | 4 |
| Total Potential Contaminant Source / Land Use Score - Zone 1B | | 10 | 7 | 7 | 6 |
| **Potential Contaminant / Land Use - ZONE II** | | | | | |
| Contaminant Sources Present | YES | 2 | 2 | 2 | |
| Sources of Class II or III leacheable contaminants or | YES | 1 | 1 | 1 | |
| Land Use Zone II | Greater Than 50% Irrigated Agricultural Land | 2 | 2 | 2 | |
| Potential Contaminant Source / Land Use Score - Zone II | | 5 | 5 | 5 | 0 |

Potential Contaminant / Land Use - ZONE III

| | | | | | |
|---|---|---|---|---|---|
| Contaminant Source Present | YES | 1 | 1 | 1 | |
| Sources of Class II or III leacheable contaminants or | YES | 1 | 1 | 1 | |
| Is there irrigated agricultural lands that occupy > 50% of | YES | 1 | 1 | 1 | |
| Total Potential Contaminant Source / Land Use Score - Zone III | | 3 | 3 | 3 | 0 |
| Cumulative Potential Contaminant / Land Use Score | | 22 | 17 | 19 | 8 |
| 4. Final Susceptibility Source Score | | 14 | 13 | 14 | 13 |
| 5. Final Well Ranking | | High | High | High | High |